IDAHO ALTERNATIVE ASSESSMENT EXTENDED **MATHEMATICS CONTENT STANDARDS**

Extended Knowledge and Skills

The use of mathematics is a powerful tool for exploring and understanding the society we live in. Proficiency in using mathematical skills is vital to students with disabilities as citizens of an increasingly technological society.

When students with disabilities exit the educational system, they will be able to use mathematics to solve problems in real-world situations of daily living. Students will apply mathematics across the domains of their life as adults in society. Appropriate technology will enable students with disabilities to apply and communicate their strategies and solutions. Appropriate technology may include calculators, computers and specialized software, and manipulatives.

Note: Alternate sample applications are examples of how a student might demonstrate performance of the alternate knowledge and skills. The lists of sample applications presented in this document are not exhaustive.

BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS

Rationale: An understanding of numbers and how they are used is necessary in the everyday world. Computational skills and procedures should be developed in the context that the learner perceives them as tools for solving problems.

Content Standard: The student will—	Extended Knowledge & Skills	Sample Applications:
01. Understand and use numbers.	**C-1. Recognize and order numbers in environmental settings.**	a. Indicate recognition of numbers in various environments, e.g., classroom numbers, bus numbers, telephone numbers, address numbers, emergency numbers.
	C-2. Demonstrate one- to- one correspondence.	a. Name or match number to numeral. b. Count students for hot lunch count. c. Give each classmate a piece of paper.
	C-3. Communicate and demonstrate numbers in environmental settings.	a. Fill in the missing number on a calendar. b. Find locker #. c. State temperature. d. Set timer. e. Recognize numbers on dice and move number of spaces.
02. Perform computations accurately.	C-4. Demonstrate knowledge of equal, more and less.	a. It's snack time. Identify if you want more juice. b. Decide whether a shopper has sufficient money to pay for an item at a grocery store. c. Compare quantities to determine if he or she has more/less. Compare by size, weight, or amount.
	C-5. Demonstrate knowledge to add and subtract whole numbers.	a. You have made one sandwich. Two more are made. How many sandwiches have been made? b. Answer adding and subtracting worksheets. c. Add problems on dry erase board. d. Add the stack of towels to another stack for inventory on a job.

Content Standard: The student will—	Extended Knowledge & Skills	Sample Applications:
	C-6. Demonstrate knowledge to multiply and divide numbers with or without the use of a calculator.	a. At the store, multiple 6 cans of soup by $.23 for a total cost. b. Multiple and divide problems on a worksheet. c. Divide the 10 towels by 5 students in PE.
03. Estimate and judge reasonableness of results.	**C-7. Select and use a method to estimate and predict amounts.**	a. Estimate if clothes are about your size when shopping. b. Use next dollar strategy. c. Who is estimated to be the tallest, shortest, fastest, etc.? d. Give examples when 5 would be too much or too little, e.g., 5 M & Ms or 5 large pizzas. e. Determine the reasonableness of prediction when measuring; .e.g., Would our classroom be closer to 5 inches or to 5 yards?
	C-8. Use estimation skills across daily living activities	a. Determine if a box is large enough when packaging items. Verify the answer to determine if the solution is reasonable. b. Determine how many items will fit comfortably into a backpack.

MATHEMATICAL REASONING AND PROBLEM SOLVING

Rationale: These processes are essential to all mathematics and must be incorporated in all other mathematics standards.

Content Standard: The student will—	Extended Knowledge & Skills:	Sample Applications:
01. Understand and use a variety of problem-solving skills.	PS-1. Recognize and demonstrate the ability to solve problems during real life experiences.	a. Make choices when presented with options b. If student has $2 for lunch, what items might he or she purchase?
	PS-2. Recognize and demonstrate the appropriate problem solving strategy to solve problems *(guess and check, working backwards, logical reasoning, making a model, using a table or drawing, patterns, etc.).*	a. Given a social story problem, select and demonstrate appropriate actions. b. Given a math story problem, identify what operation is needed to solve it, e.g., draw, calculate, use manipulatives.

Content Standard: The student will—	Extended Knowledge & Skills:	Sample Applications:
02. Use reasoning skills to recognize problems and express them mathematically.	PS-3. Demonstrate an understanding of cause and effect (If I do this, then this will happen).	a. Use a switch to start the movement of a toy. b. Put your hand near a motion light to turn it on. c. Wheelchair gets stuck in doorway. Student must manipulate chair or choose alternative route. d. Recognizes cause and effect of turning the faucet on and off.
	PS-4. Choose appropriate application to solve a problem.	a. Given this situation: You want to go to participate in an activity. What time is it and how much time does it take to get there? When do you have to leave? Match times, count time, etc. b. Given one candy bar and three people that want it, how are you going to solve the problem? c. Follow scheduled activities to get a reward (time management skills).
03. Apply appropriate technology and models to find solutions to problems.	**PS-5. Use a calculator, computers, etc/to solve problems *(adding, subtracting, etc)*.**	a. Add price of items for a party. b. Use switches to make choices to get what you need. c. Follow oral or written sequences to desired outcome.
04. Communicate results using appropriate terminology and methods.	PS-6. Use communication or augmentative communication systems to express results.	a. Use a computer, alpha-talker, etc., to communicate solutions to math problems. b. Communicate more or less when having lunch.

CONCEPTS AND PRINCIPLES OF MEASUREMENT

Rationale: The first step in scientific investigation is to understand the measurable attributes of objects.

Content Standard: The student will—	Extended Knowledge & Skills	Sample Applications
01. Understand and use U.S. customary and metric measurements.	**M-1. Use measurement skills *(in school, work, daily home living, and recreational activities)*.**	a. Measure ingredients. b. Count steps while walking to calculate a distance. c. Measure the height of a person with a string; then measure the string with a yardstick.

Content Standard: The student will—	Extended Knowledge & Skills	Sample Applications
	M-2. Use money skills *(in school, work, daily home living, and recreational activities)***.**	a. Use vending machines. b. Purchase lunch or other items. c. Pay for recreational activities, e.g., bowling, movies. d. Earn tokens and exchange them for rewards.
	M-3. Use time management skills *(in school, work, daily home living, and community activities).*	a. Students will record the time they arrive in class and indicate if they are on time or late. b. Set alarm clock for waking up in the morning for week.
02. Understand the concepts of rates and other derived or indirect measurements.	**M-4. Determine equivalent units, comparable units, and conversions.**	a. Converting ½ cup of shortening to 1 stick of margarine. b. Use balance scales to show equality. c. Use body for non-standard forms of measurement, e.g., space between knuckles is about an inch, fingernail width is about a centimeter, so many steps across the room is about a number of feet.
03. Understand the concepts of ratios and proportions.	M-5. Apply and use proportions, ratios, and balance.	a. Build models. b. Determine distance from map scale. c. Predict size limitations based on strength of materials, e.g., what a backpack will hold, a baggie, suitcase. d. Calculate amounts of concentrated ingredients needed for a specific mixture, e.g., juice, Kool-Aid, box mixes.
04. Understand dimensional analysis.	M-6. Perform error analysis by understanding cause and effect.	a. The room is dark. What should you do? b. You end up in the wrong restroom. How did you get there? c. You taste the cake and it is really salty, what happened? d. You failed to put the lid on the blender and then turned it on. What should you have done?

CONCEPTS AND LANGUAGE OF ALGEBRA

Rationale: Algebra is the language of mathematics and science. Through the use of variables and operations, algebra allows students to form abstract models from contextual information.

Content Standard: The student will—	Extended Knowledge & Skills:	Sample Applications:
01. Use algebraic symbolism as a tool to represent mathematical relationships.	**CA-1. Compare sets of objects using vocabulary (less than, more than, and same as, bigger, smaller).**	a. Identify which set of objects is more, less, or same as. b. Identify which calendar day comes before the other.
	CA-2. Explore the relationship between addition and subtraction.	a. Solve a story problem that adds and subtracts. b. Figure out how many days are left until Christmas? c. During circle time, determine the number of students present and the number of students absent. d. During as job, discover how many soda pop cans are left over when filling a case of soda. e. How do you make teams even when there are 2 players on one team and 4 on the other? f. Solve problems with 0 to discover the concept of zero –it does not change the starting value in addition or subtraction.
02. Evaluate algebraic expressions.	**CA-3. Solve missing addends and missing factor problems.**	a. Put 4 items on a table, remove on item then ask what is missing. b. Given one item in a task, ask what other items are needed to complete the task, eg – brushing teeth? c. Write problem and solve for missing information using manipulatives eg 3 + o = 5 d. When stocking a vending machine, ask student to determine how many more candy bars go in each section.

CONCEPTS AND PRINCIPLES OF GEOMETRY

Rationale: The study of geometry helps students represent and make sense of the world by discovering relationships and developing spatial sense.

Content Standard: The student will—	Extended Knowledge & Skills:	Sample Applications:
01. Apply concepts of size, shape, and spatial relationships.	**G-1. Match (object to object, picture to picture, etc.).**	a. Identify attributes of objects/groups of objects. b. Put away silverware in appropriate grouping. c. Put away art tools in appropriate places. d. Match using calendar box schedule, picture schedule.
	G-2. Sort and classify groups of objects used in everyday living activities.	a. Put away silverware in appropriate grouping. b. Put away art tools in appropriate places. c. Sort dry goods in a cupboard and consumables in the refrigerator.
	G-3. Sort and classify and groups of objects used in everyday living activities by common attributes.	a. Identify attributes of objects/groups of objects. b. Sort laundry by shirts, socks, and pants.
	G-4. Explore and demonstrate awareness of spatial concepts.	a. Find personal space and appropriate proximity. b. Sharpen a pencil in the proper size hole. c. Complete puzzles. d. Place tactile objects in spatial positions, i.e. under, above, next, etc
	G-5. Identify awareness of geometry in the world.	a. Identify patterns in the real world. b. Recognize shapes in the community, e.g., square, triangle, circles. c. Identify shapes and match to objects in the environment.
02. Apply the geometry of right triangles.	**G-6. Explore and demonstrate awareness of straight lines, corners, and other properties of right triangles and other shapes.**	a. Align paper together and staple. b. Align books when stacking them. c. Stacking blocks, cubes, legos d. Turn corners in a wheelchair e. Maneuver in space in relationship to right angles, i.e. corners, ramps, halls, etc f. Follow a map/directions using straight lines and right angles.

DATA ANALYSIS, PROBABILITY, AND STATISTICS

Rationale: With society's expanding use of data for prediction and decision making, it is important that students develop an understanding of the concepts and processes used in analyzing data.

Content Standard: The student will—	Extended Knowledge & Skills	Sample Applications
01. Understand data analysis.	**DA-1. Read and interpret personal progress charts, map, etc.**	a. Read a graph and decide to improve personal performance. b. Explain stats on trading cards. c. Use playoff charts and predict outcomes.
02. Collect, organize, and display data.	**DA-2. Gather and display data to answer a question.**	a. Gather/sort objects by attributes: Short to tall, Small to large, Least to greatest b. Collect and display the lunch count c. Cooperative learning group activity in the general classroom d. Student collects and displays hours worked on a time sheet to determine total hours worked per week
03. Understand basic concepts of probability.	DA-3. Predict events using individual schedule system.	a. Follow daily schedule to anticipate events or classes throughout the day, e.g., objects, pictures, symbols. b. Calendar box. c. Analyze card games, dice games for probability. d. Explain what the weather man means by "chance of rain." e. From current news events, recognize a pattern and predict the next event.
04. Apply simple statistical measurements.	DA-4. Understand basic statistical concepts (mean, median, mode).	a. Understand "middle." b. Name the person who is tallest and the person who is the shortest as a range. c. Average grades with a calculator.
05. Make predictions or decisions based on data.	**DA-5. Use data to predict.**	a. What clothes are appropriate for the weather? b. Calendar charts. c. At mid-season, predict a team's

Content Standard: The student will—	Extended Knowledge & Skills	Sample Applications
		position in the playoffs.

FUNCTIONS AND MATHEMATICAL MODELS

Rationale: One of the central themes of mathematics is the study of patterns, relationships, and functions. Exploring patterns helps students develop mathematical power.

Content Standard: The student will—	Extended Knowledge & Skills	Sample Applications
01. Understand the concept of functions.	**FM-1. Use and demonstrate a pattern.**	a. Count by 2s, 5s, and 10s, using manipulatives if needed. b. Counting on… c. Recognize patterns in a calendar chart. d. Notice patterns in the environment. e. Be aware that a purchase will also include some tax.
	FM-2. Use kinesthetic, visual, auditory skills to copy/create/complete patterns and sequence.	a. Tangrams. b. Attribute blocks or Parquetry Blocks to make a Mother's Day present or other art project. c. From a picture, make own necklace using patterns of beads.
02. Represent equations, inequalities, and functions in a variety of formats.	**FM-3. Use and demonstrate equal & unequal amounts.**	a. Place equal amounts of objects in each hand. b. Match the # of chairs to the # of desks. c. Find the right size of clothes, shoes, etc d. Sort and graph objects by one or more attributes; i.e. button, by shape, color, size. Determine which attribute occurs more often.